

REMARKS

Claims 1-14 are pending in this application. By the Office Action, claims 1-13 are rejected under 35 U.S.C. §112 and §102(b). By this Amendment, claims 1-3, 6, 7, 9, and 11 are amended only for clarity without altering the scope of the claims. New claim 14 is added. Support for the amendment to claims 2, 7, 9, and 11 can be found in the specification at, for example, page 9, lines 14-16. Support for the further amendment to claim 1 can be found in the specification at, for example, page 32, lines 9-24. No new matter is added.

Claim 7 is amended to correct the recited value range in the claim from "15 to 15" to "15 to 150" as was recited in original claim 7 as filed. The range was inadvertently changed in the prior amendment.

Applicants thank Examiner Acquah for the courtesies extended their representative at the August 24, 2006, personal interview. Applicants' separate record of the substance of the interview is incorporated in the above amendments and the following remarks.

I. Rejections Under §112

Claims 1-13 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Applicants respectfully traverse this rejection.

A. Claim 1

The Office Action argues that claim 1 is indefinite as to the materials reacted to form the polycarboxylic acid series esterified copolymer. By this Amendment, claim 1 is amended to clarify that the claimed additive of claim 1 comprises the component (A), which is a polycarboxylic acid series esterified copolymer. The component (A) is obtained by esterifying a part or whole of carboxylic acid groups of a compound (a) with a component (b). In turn, the component (a) is a polycarboxylic acid series copolymer having a polyoxyalkylene chain, and the component (b) is a derivative of an alcohol having a polyoxyalkylene chain and represented by the formula (1). Accordingly, as clarified in

amended claim 1, the compound (a), which is a polycarboxylic acid series copolymer, includes the recited polyoxyalkylene chain. The component (a) is described in the specification at page 4, line 26 to page 5, line 7, and the component (b) is described in the specification at page 5, line 11 to page 6, line 10.

The Office Action argues that claim 2 is indefinite for reciting "molecular weight of the polyoxyalkylene site" of the compound. By this Amendment, claim 2 is amended to instead refer to the molecular weight of "a polyoxyalkylene compound used as a material for producing the component (A)." The polyoxyalkylene compound is described in claim 1. Further, one of ordinary skill in the art would readily understand the meaning of the "polyoxyalkylene compound." The "polyoxyalkylene compound" is a chain composed of repeated units of (RO) such as (C₂H₄O) and the end group such as CH₃. See, for example, table 1, synthetic example 1 in page 16 of the specification. Therein, H₂C=CHCH₂O(C₂H₄O)₃₃CH₃ and maleic anhydride are reacted with each other to produce a carboxylic acid series copolymer. In that compound, "H₂C=CHCH₂O(C₂H₄O)₃₃CH₃" corresponds with the polyoxyalkylene chain. Claims 7, 9, and 11 are amended in a similar manner.

The Office Action argues that claim 6 is indefinite because compounds (A) and (B) appear to be the same, and dependent claims recite a further compound (C) that is also a polycarboxylic acid copolymer. In response, Applicants point out that the component (A) is described above. The component (B) recited in claim 6 generally corresponds to the component (b) described above and recited in claim 1, and the component (C) recited for example in claim 8 generally corresponds to the component (a) described above and recited in claim 1. Thus, claim 6 and the dependent claims require not only the presence of component (A), which is a reaction product of components (a) and (b), but also requires the presence of separate components (B) and/or (C). The claims are not indefinite.

For at least these reasons, the claims are not indefinite. Reconsideration and withdrawal of the rejection are respectfully requested.

II. Rejections Under §102

Claims 1-13 are rejected under 35 U.S.C. §102(b) over JP 06-298556 ("JP 556"). Applicants respectfully traverse this rejection.

Independent claim 1, as amended, is directed to an additive for cement comprising the following component (A), which is a polycarboxylic acid series esterified copolymer obtained by esterifying a part or whole of carboxylic acid groups of (a) a polycarboxylic acid series copolymer having a polyoxyalkylene chain with (b) a derivative of an alcohol having a polyoxyalkylene chain and represented by the formula. Claim 1 further specifies that a cement prepared with the additive exhibits a slump peak at a time point of more than 30 minutes after mixing at 30°C. Such an additive for cement is nowhere disclosed in the cited reference.

JP 556 discloses an esterified product to improve slump loss preventing properties, water reducing properties, and workability. Abstract; paragraphs [0003] and [0005]. The esterified product is a polyoxyalkylene derivative of formula I copolymerized with maleic anhydride, which is reacted with a polyoxyalkylene derivative of formula II. Abstract. However, JP 556 does not disclose the claimed invention.

It appears that the Office Action implies that formula II in JP 556 corresponds to the claimed polycarboxylic acid series esterified copolymer obtained by esterifying a part or whole of carboxylic acid groups of a polycarboxylic acid series copolymer having a polyoxyalkylene chain with a derivative of an alcohol having a polyoxyalkylene chain and represented by the formula $R^1-(AO)_{n1}-H$, where R^1- can represent R^2R^3N- , R^2 and R^3 represent hydrocarbon groups having 1 to 6 carbon atom(s), AO represents an oxyalkylene group having 2 to 4 carbon atoms, and $n1$ represents an average mole number of addition of

said oxyalkylene group and is 1 to 8. While formula II in JP 556 may appear to overlap with the claimed polycarboxylic acid series esterified copolymer, JP 556 does not specifically disclose the claimed invention.

Formula II in JP 556 is $R^2-R^3-N(A^2O)_m-H$, where R^2 and R^3 represent 1-4 carbon atom alkyl groups, A^2O represents an oxyalkylene group having 2 to 4 carbon atoms, and m is 1-300. As such, Formula II in JP 556 represents as many as 14,400 or more different compounds. Due to the broad range of compounds encompassed by the formula II in JP 556, that formula cannot anticipate each and every one of those compounds. It is well accepted that each claimed element cannot merely be disclosed in the reference. Rather, the reference must disclose combining those separate components according to the claimed invention. For example, the Federal Circuit clearly held in *Ultradent Products, Inc. v. Life-Like Cosmetics, Inc.*, 127 F.3d 1065, 1071-72, 44 USPQ2d 1336, 1341-42 (Fed. Cir. 1997), that the disclosure of numerous possible combinations does not necessarily anticipate the claimed invention. The Court stated "the burden [of showing anticipation] was to show that the [reference] would describe to one of skill in the art . . . combinations meeting the limitations of the claims, from among the many possible candidates." See also *In re Petering*, 301 F.2d 676, 681, 133 USPQ 275, 279 (C.C.P.A. 1962), where the court held that "even though appellants' claimed compounds are encompassed by the broad generic disclosure, we do not think this disclosure by itself describes appellants' invention . . . within the meaning of 35 U.S.C. 102(b)."

A comparison of the compound of claim 1 and formula II of JP 5656 can be summarized as follows:

CLAIM 1	JP 556 formula II
$R^1-(AO)_{n1}-H$	$R^2-R^3-N(A^2O)_m-H$
R^1- : R^2R^3N- or a group of a heterocyclic ring having a nitrogen atom	R^2-R^3-N-
R^2 and R^3 : hydrocarbon groups having 1 to 6 carbon atom(s)	R^2 and R^3 : 1-4 carbon atom alkyl groups
AO: an oxyalkylene group having 2 to 4 carbon atoms	A^2O : an oxyalkylene group having 2 to 4 carbon atoms
$n1$: 1 to 8	m : 1-300

In the present case, the mere disclosure of overlapping selections for R^2 , R^3 , A^2 and m in JP 556 does not anticipate the claimed invention. The disclosures are not co-extensive with the claimed compounds, and JP 556 fails to provide any specific teachings for selecting the different groups to provide the compounds of the claimed invention. That is, whereas the claimed R^2 and R^3 groups represent C_{1-6} hydrocarbon groups, JP 556 only discloses C_{1-4} alkyl groups. Instant claim 1 and JP 556 each disclose 2-4 carbon atom oxyalkylene groups as the A^2O (or AO) group. However, JP 556 and the claimed invention vastly differ on the definition of the average mole number of addition of the oxyalkylene group. Whereas instant claim 1 specifically recites a narrow range of 1-8 for the variable $n1$, JP 556's corresponding variable m is broadly recited to be 1-300 -- a range over 37 times bigger than that of instant claim 1.

Moreover, JP 556 does not provide any specific teaching for preferred values of its variable m . In the broad disclosure, JP 556 simply discloses the broad range of 1-300 for the variable m . The only narrower values of m are supplied in the Examples. For example, at Table 2, JP 556 discloses compounds where m is specifically equal to 11, 30, 33, 35, 50, and 110. See Manufacturing Examples 1-11. Nowhere does JP 556 disclose that the variable m should be in the range 1-8, or should be any value lower than the value of 11 in the Examples.

Further, limiting the variable n1 to the range 1-8 in the claims is an important feature, not taught by JP 556. Compounds where n1 is in the range 1-8 are different from the specific compounds disclosed in JP 556 where n1 (or m) is 11, 30, 33, 35, 50, and 110.

As support thereof, attached hereto is an executed Declaration Under 37 C.F.R. §1.132, by Tatsuya Matsui. The Declaration details an experiment where a compound according to claim 1 of the present application was synthesized, but where the value n1 is 11. That is, the Declaration describes an experiment carried out according to the disclosure of "manufacturing example 3" in paragraphs (0008) to (0013) of JP 06-298556A and page 31, lines 2 to 20 of the specification, to produce a compound within the scope of claim 1, except that n1 is 11 as in the Example of JP 556.

The composition is summarized as follows.

			Manufacturing example 3 of JP 6-298556A
A)	Copolymer	Compound of formula (4) (mol)	H ₂ C=CHCH ₂ O (C ₂ H ₄ O) ₃₃ CH ₃ (1. 0)
		Maleic acid series Compound (mol)	Maleic anhydride (1. 0)
		Weight ratio of the copolymer	8 7. 7
	Compound of formula (1) (weight ratio)		(CH ₃) ₂ N (C ₂ H ₄ O) ₁₁ H (1 2. 3)
Component (B)			Not added
Component [C]			0

According to the compound of manufacturing example 3 where n1=11, slump loss can be clearly observed 60 minutes or 90 minutes after the mixing at 30°C. However, as shown in JP 556, slump loss was not observed at 60 minutes or 90 minutes after the mixing, at the lower temperature of 20°C. See, for example, example 3 of table 4, paragraph (0015), of JP 556.

These results clearly show the critical effects of limiting n_1 to the range of 1 to 8 according to the claimed invention. This importance of the average mole number of addition of the oxyalkylene group is also not disclosed in JP 556.

Because JP 556 fails to specifically disclose the claimed compounds, JP 556 cannot anticipate the claimed invention. Reconsideration and withdrawal of the rejection are respectfully requested.

Not only does JP 556 not specifically disclose the claimed compounds, but JP 556 also fails to teach or suggest the claimed compounds, or the unexpected results provided thereby.

As described above, with respect to the variable m , JP 556 discloses a broad range of 1-300, and discloses specific values only in the range of 11-110, namely 11, 30, 33, 35, 50, and 110, in Table 2. At page 7 (Table 4) of the reference, it is disclosed that cement compositions including the compounds exhibit slump values that are maintained even after 90 minutes after the mixing. These results in JP 556 appear to be independent of the value m .

However, the present inventors have discovered that slump loss at high temperature (30°C) can be considerably reduced by lowering the average mole number of addition (n_1 in claim 1). Specifically, slump loss at high temperature (30°C) can be considerably reduced by lowering the average mole number of addition (n_1) to be limited to 1 to 8. Furthermore, such slump loss at high temperature (30°C) is difficult to predict based only on experimental results of slump loss at ambient temperature (20°C). These results are not taught or suggested by JP 556.

These unexpected results are shown in Tables 2 to 7 of the application. For example, in Table 5, n_1 is selected to be 1, 2, and 3 in Examples 1, 2, and 3, and is selected to be 33 in Comparative Example 1. For these experiments, the slumps 90 minutes after mixing (at 20°C) are 20.0, 20.0, 20.5, and 19.0, respectively in Examples 1, 2, and 3 and Comparative

Example 1. These results indicate comparable slump results for n_1 values ranging from 1 to 33. However, the slumps 90 minutes after mixing (at 30°C) are 19.0, 19.0, 19.6, and 15.4, respectively in Examples 1, 2, and 3 and Comparative Example 1. These results indicate that despite the comparable results at 20°C, results at 30°C are advantageous where the n_1 value is 1 to 8, and poor where the n_1 value is 33. Similar results are shown in Tables 6 and 7 of the specification. Such results are not predictable from the results at 20°C alone, and are nowhere taught or suggested in JP 556.

While JP 556 provides slump values for its compositions, those values are reported only at 20°C. In the Examples of JP 556, the slump values at 20°C are all disclosed to be generally comparable, regardless of the selection of the variable m to be between 11 and 110. However, JP 556 does not provide any slump results at 30°C, and does not teach or suggest the unexpected results that slump values significantly change at values outside the range of 1 to 8. JP 556 neither teaches this problem, nor its solution.


Accordingly, for this additional reason, the claimed invention also would not have been obvious over JP 556. The claims are thus patentable over JP 556.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Enclosure:

Executed Declaration Under 37 C.F.R. §1.132

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